

REMARKS

This Amendment is submitted in response to the Office Action dated March 28, 2003, having a shortened statutory period set to expire June 28, 2003. Claims 1, 3-14, and 16-20 are pending. Applicants have amended Claims 1, 3, 4, 6, 8, 14, 16, 17 and 19, and canceled Claims 2 and 15.

Specification

On page 2 of the Office Action, the abstract was objected because of its length. Applicants have amended the abstract to limit its length to 150 words and to eliminate redundant phrases.

Claims

Claims 1, 3-14, and 16-20 are pending. Applicants have amended Claims 1, 3, 4, 6, 8, 14, 16, 17 and 19, and canceled Claims 2 and 15. No new matter has been introduced by these amendments. Support for these amendments can be found in Claims 2, 3, 8, 10, 13, and 15 of the originally filed specification of the application.

Claim Rejections -- 35 U.S.C. § 103

In paragraph 3 of the Office Action, Claims 1-3, 8, 10, and 13-16 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Number 5,963,887 to *Giorgio*. In paragraph 4 of the Office Action, Claims 4, 11, and 17 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over *Giorgio* as applied to Claims 1, 2, 8, 14, and 15 above, and further in view of U.S. Patent No. 5,926,386 to *Ott et al.* In paragraph 5 of the Office Action, Claims 5, 9, and 18 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over *Giorgio* as applied to Claims 1, 8, and 14 above, and further in view of U.S. Patent No. 6,163,266 to *Fasullo et al.* In paragraph 6 of the Office Action, Claims 6, 12, and 19 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over *Giorgio* as applied to Claims 1, 2, 8, 14, and 15 above, and further in view of JP405056178 to *Fujisaka*. In paragraph 7 of the Office Action, Claims 7 and 20 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over *Giorgio* as applied to Claims 1 and 14 above, and further in view of U.S.

Patent No. 5,604,654 to *Wille et al.* Those rejections are respectfully traversed and reconsideration of the claims is requested.

Referring now to exemplary Claim 14, therein is recited a data processing system including:

a plurality of fans, wherein each of said plurality of fans operates at a different frequency and generates a tach signal indicative of said fan operation that is output on said single fan sense node, wherein each of said tach signals is output concurrently with each of the other said tach signals on said single fan sense node;

Giorgio does not show a plurality of fans that at each output their tach signals on a “single fan sense node, wherein each of said tach signals is output concurrently with each of the other said tach signals on said single fan sense node,” as recited in Claim 14. As seen in Figures 1 and 2 and described at column 5, lines 1-67 of *Giorgio*, fans 32A-32N are coupled to tachometers 34A-34N. Tachometers 34A-34N each individually generate a tach signal and output the tach signal to separate input pins on data selector 44. As explained at column 5, lines 2-5, data selector 44 responds to SELECT bus 48 signals by conveying (or multiplexing) data from the selected one of inputs to the data selector to the single output 46. As explained at column 5, lines 42-46, microcontroller 42 includes a “pulse accumulator 78 and a selection address generator 80 for producing the SELECT signals on the SELECT bus 48. Integral input port 82 receives the selected one of the PWM control signals and the tachometer signals on data bus 46...” (emphasis by Applicant). Therefore, as can be seen by the description in *Giorgio*, port 82 of microcontroller 42 only receives a single selected tach signal, and does not simultaneously receive a combined signal of all the tach signals from each of the plurality of fans. Consequently, Applicants submit that the element of a “plurality of fans” as recited in Claim 14 is not shown or suggested by *Giorgio*.

Claim 14 further includes the elements of:

a summing circuit, coupled to said single fan sense node, that combines said waveshaped tach signals at said single fan sense node into a single combined signal; and

a frequency discriminator, coupled to said summing circuit, that separates said single combined signal into multiple components, wherein each of said multiple components corresponds to a particular fan in said plurality of fans.

Again, Giorgio does not show these elements of the present invention. It is suggested in the Office Action that Giorgio discloses a summing circuit by the description of pulse accumulator 78, shown at Figure 2. However, as has been explained above, port 82, and consequently pulse accumulator 78, perceives only a single selected tach signal at any one time. Therefore, the pulse accumulator 78 does not perform any function “*that combines said waveshaped tach signals at said fan sense node into a single combined signal.*” As explained at column 5, lines 42-67 and column 6, lines 58-67 of Giorgio, pulse accumulator 78 is used to detect the frequencies of each of the individual signals at port 82 encoded using pulse width modulation. While the pulse accumulator 78 accumulates the number of pulses transmitted by each individual signal, no summing of multiple tach signals is performed such that multiple tach signals from tachometers 34A-34N are combined into a single combined signal at the output of pulse accumulator 78.

The Office Action further suggests that a “frequency discriminator” for separating a single combined signal into multiple components is disclosed by Giorgio at column 5, lines 60-67. Therein, Giorgio is merely teaching therein that each of the individual fan speeds for each of the fans 32A-32N are stored in the memory buffer 92 individually in separate memory locations 92A-92N. These individual fan speeds are stored separately because pulse accumulator 78 produces these values separately based on the select signal on the SELECT bus 48. Nothing within Giorgio suggests a previous circuit had combined the fan speeds or that these memory buffers have special functionality to perform a fast fourier transform, for example, in order to separate a single-combined signal into multiple components for storage in each of the memory locations 92A-92N. Consequently, Applicants submit that Giorgio in no way suggests a frequency discriminator circuit that separates a single combined signal into its multiple components.

For the reasons given above, Applicants respectfully submit that Giorgio does not show a data processing system as recited in Claim 14, and particularly does not show:

a plurality of fans, wherein each of said plurality of fans operates at a different frequency and generates a tach signal indicative of said fan operation that is output on said single fan sense node, wherein each of said tach signals is output concurrently with each of the other said tach signals on said single fan sense node;

...

a summing circuit, coupled to said fan sense node, that combines said waveshaped tach signals at said fan sense node into a single combined signal; and

a frequency discriminator, coupled to said summing circuit, that separates said single combined signal into multiple components, wherein each of said multiple components corresponds to a particular fan in said plurality of fans.

Therefore, for the reasons given above, Applicants respectfully request reconsideration of Claim 14 and withdrawal of the rejection under Section 103. Also, for the same reasons given above with respect to the request for reconsideration of Claim 14, Applicants respectfully request reconsideration of independent Claim 1 and request withdrawal of the rejection of Claim 1 under Section 103.

With respect to exemplary independent Claim 8, Applicants believe that *Giorgio* does not show or suggest the steps of “combining” and “separating” as recited therein. It is suggested on page 3 of the present Office Action that in Figure 2 and at column 5, lines 60-67 of *Giorgio* it is shown combining waveshaped tach signals at a single sense node into a single combined signal and separating said single combined signal into multiple components, wherein each of said multiple components corresponds to an associated fan of said plurality of fans. However, as Applicants have argued above, *Giorgio* does not describe combining multiple tach signals into a single combined signal, or a circuit or process for separating a single combined signal of multiple tach signals into their individual components because *Giorgio* utilizes a data selector 44 for switching among the various outputs of the tachometers and does not need to combine or separate tach signals. Because microcontroller 42 only receives one tach signal at any given time, it can logically differentiate between the tach signals of the various fans and identify the applicable fan based on the select signals 48 that it produces. Therefore, *Giorgio* has no need for a method of separating a single combined signal into its multiple components of multiple tach signals, as recited in Claim 8. Consequently, Applicants respectfully submit that *Giorgio* does

not show or suggest the method as recited in Claim 8 because *Giorgio* does not show or suggest the steps of:

combining said waveshaped tach signals at said single sense node into a single combined tach signal; and

separating said single combined tach signal into multiple components, wherein each of said multiple components corresponds to an associated fan in said plurality of fans.

Consequently, Applicants respectfully request reconsideration of Claim 8 and request that the rejection under Section 103 be withdrawn.

In summary, Applicants submit that *Giorgio* does not show or suggest the present invention. *Giorgio* shows a control system 40 having multiple input pins for each of the fan speeds, which presents all the problems seen in the prior art as described in the background section of the present application. *Giorgio* does not suggest a method and system as recited in the present application for concurrently combining the tach signals from each of the tachometers associated with the fans to input a single signal to the control system, and then separating each of the individual tach signals from the combined signal within the control system in order to provide feedback control to the fan systems. Therefore, for the reasons given above, Applicants respectfully request reconsideration of independent Claims 1, 8, and 14, and further for the same reasons as given above, dependent Claims 3-7, 9-13, and 16-20. Further, as Applicants have shown that the prior art does not show or suggest the present invention as claimed and believing that there are no other grounds for rejection of the present application, Applicants submit that the present application is now in condition for allowance.

Respectfully submitted,



Craig Yuden
Reg. No. 39,083
BRACEWELL & PATTERSON, L.L.P.
P.O. Box 969
Austin, Texas 78767-0969
Tel.: 512.472.7800

ATTORNEY FOR APPLICANT(S)

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